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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 10/673,939 | 09/29/2003 | Masahiro Kato | 520514.00007 | 1647 |

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| EXAMINER | |
|---|---|
| BOLDEN, ELIZABETH A | |
| **ART UNIT** | **PAPER NUMBER** |
| 1755 | |

DATE MAILED: 03/13/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

| Office Action Summary | Application No. | Applicant(s) | |
|---|---|---|---|
| | 10/673,939 | KATO ET AL. | |
| | Examiner | Art Unit | |
| | Elizabeth A. Bolden | 1755 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on *21 December 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) *1-6* is/are pending in the application.

4a) Of the above claim(s) *5 and 6* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-4* is/are rejected.

7)☒ Claim(s) *1-4* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *29 September 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *12/15/03*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

## DETAILED ACTION

### *Election/Restrictions*

Applicant's election with traverse of Group I in the reply filed on 21 December 2005 is acknowledged.

Applicant's election of Group I in the reply filed on 27 December 2005 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).

Claims 5 and 6 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected group, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on 21 December 2005.

### *Priority*

Acknowledgment is made of applicant's claim for foreign priority based on an application filed in Japan on 30 September 2002. It is noted, however, that applicant has not filed a certified copy of the Japanese application 2002-284628 as required by 35 U.S.C. 119(b).

### *Information Disclosure Statement*

The information disclosure statement (IDS) submitted on 15 December 2003 has been considered by the examiner. The Examiner has crossed out the Japanese Application Numbers on the PTO form 1149 and inserted the corresponding Japanese Publication Numbers for the cited references.

The information disclosure statement filed 15 December 2003 fails to comply with 37 CFR 1.98(a)(3) because it does not include a concise explanation of the relevance, as it is presently understood by the individual designated in 37 CFR 1.56(c) most knowledgeable about the content of the information, of each patent listed that is not in the English language. It has been placed in the application file, but the information referred to therein HAS been considered.

However, Japanese Application Number 2001-177575 and 10-237713 (Japanese Patent Publications 2002-020319 and 2000-072749) appear to be related pharmacological compounds.

While the instant application claims a sealing material for sealing an envelop of an electron tube utilizing a tin phosphate glass.

### *Claim Objections*

Claims 1-4 are objected to because of the following informalities:

In claims 1- 3, the word "type" in the phrase "$P_2O_5$-SnO type low melting glass powder" is objected to. It is unclear if the glass powder must be a tin phosphate glass.

In claim 1, the symbol "~" in the phrase "0.001~0.1 μm" is objected to. It is unclear if the "~" is meant to state the range "from exactly 0.001 to exactly 0.1" or if the range is meant to read "approximately 0.001 to approximately 0.1", since the tilde (~) is generally used as a symbol to represent approximately.

In claim 3, the symbol "~" in the phrase "0.01~2 wt%" is objected to. It is unclear if the "~" is meant to state the range "from exactly 0.01 to exactly 2" or if the range is meant to read "approximately 0.01 to approximately 2", since the tilde (~) is generally used as a symbol to represent approximately.

In claim 4, the 2nd appearance of the phrase "fine particles" in the section of the claim "wherein the insulating oxide fine particles are selected from the group ... $ZrO_2$ fine particles" is objected to. The group of materials the insulating oxide fine particles would obviously be fine particles; therefore the 2nd appearance of the phrase "fine particles" at the end of the claim is confusing and redundant.

Appropriate correction is required.

### *Claim Rejections - 35 USC § 112*

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter, which the applicant regards as his invention.

Claims 1-4 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The term "low melting glass powder" in claims 1-3 is a relative term, which renders the claims indefinite. The term "low melting" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably appraised of the scope of the invention. While the specification does teach that a "$P_2O_5$-SnO type low melting glass powder" has a softening point around 300-400°C it is unclear if the actual melting point of the glass powder is relevant to the instantly claimed sealing material.

The term "low expansion coefficient" in claim 1 is a relative term, which renders the claim indefinite. The term "low expansion coefficient" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably appraised of the scope of the invention. At what point is the expansion coefficient of the thermal expansion controlling ceramics low enough to be useful for the instant invention.

The term " insulating" in the phrase "insulating oxide fine particles" in claims 1-4 is a relative term which renders the claims indefinite. The term "insulating" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably appraised of the scope of the invention. Are the insulating oxide fine particles, electrically, thermally, or magnetically insulating?

### *Claim Rejections - 35 USC § 103*

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1-4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Usui et al., US Patent 6,355,586.

Usui et al. teach a glass sealing material comprising a low melting point tin phosphate glass composition, a thermal expansion controlling filler and other insulating oxide fillers as

recited in instant claims 1-4. See Abstract, column 1, lines 1-12, column 2, lines 18-33, column 6, lines 3-64, column 7, lines 5-47, column 8, lines 1-11, and Table 1, examples 1, 2, 4, and 6-9. Usui et al. teach that the average particle size of the glass powder is 10-20 μm. See column 12, lines 34-36. Usui et al. teach that the filler materials include alumina, mullite, zircon, aluminum titanate, cordierite, silica, beta-quarts, SiO2 and beta-spodumene and Eucryptite. See column 6, lines 30-52 and column 8, lines 25-28.

Usui et al. fail to teach any examples or compositional ranges that are sufficiently specific to anticipate the particle diameter of the insulating fine particles.

Accordingly, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have selected the overlapping glass composition, a filler material, and insulating fine particles, while selecting the insulating oxide fine particles to have a smaller particles size the glass mixture because a powder batch having multiple distributions of particle size diameters combines to make a cohesive batch wherein the largest component the glass powder would have the largest particle size distribution at 10-20μm and the thermal expansion controlling ceramics and insulating fine particles would obviously have a lower particle size distribution.

Claims 1-4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Morena, US Patent 6,048,811.

Morena teaches a glass sealing material comprising a low melting point tin phosphate glass composition, a thermal expansion controlling filler and other insulating oxide fillers as recited in instant claims 1-4. See Abstract, column 1, lines 9-11, column 2, lines 5-9 and 43-55, column 3, lines 21-40, column 5, line 65 to column 6, line 5, and column 6, line 6 to column 7, line 2. Morena teaches that the average particle size of the glass powder is 10-20 μm. See column 5, lines 33-35. Morena teaches that the filler materials include alumina, aluminum titanate, barium titanate, cordierite, silica, beta-quarts, SiO2 and beta-spodumene and Eucryptite. See column 4 lines 3-30 and column 8, lines 25-28.

Usui et al. fail to teach any examples or compositional ranges that are sufficiently specific to anticipate the particle diameter of the insulating fine particles.

Accordingly, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have selected the overlapping glass composition, a filler material, and insulating fine particles, while selecting the insulating oxide fine particles to have a smaller particles size the glass mixture because a powder batch having multiple distributions of particle size diameters combines to make a cohesive batch wherein the largest component the glass powder would have the largest particle size distribution at 10-20μm and the thermal expansion controlling ceramics and insulating fine particles would obviously have a lower particle size distribution.. See column 4, lines 5-13.

***Conclusion***

The additional references cited on the 892 have been cited as art of interest since they are considered to be cumulative to or less than the art relied upon in the rejections above.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Elizabeth A. Bolden whose telephone number is 571-272-1363. The examiner can normally be reached on 9:30 am-6:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jerry Lorengo can be reached on 571-272-1233. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

EAB
6 March 2006